

CLAIMS

What is claimed is:

1. A retroviral vector comprising one or more promoters inserted in antisense orientation within the 5' LTR region and one or more coding sequences inserted in antisense orientation within the 3' LTR region, both, the promoter as well as the coding sequence, inserted in such a way as to ensure that the promoter and the coding sequence become duplicated during the process of reverse transcription in a target cell and appear in the 3' as well as in the 5' LTR region of the resulting provirus in a fashion where the promoter is located upstream of the coding sequence allowing it to drive gene expression.
2. The retroviral vector according to claim 1, wherein said promoter is inserted within the U5 region of the 5' LTR.
3. The retroviral vector according to claim 1, wherein said coding sequence is inserted within the U3 region of the 3' LTR.
4. The retroviral vector according to claim 1, wherein said coding sequence comprises heterologous DNA.
5. The retroviral vector according to claim 4, wherein said coding sequence is selected from one or more elements of the group consisting of marker genes, therapeutic genes, antiviral genes, antitumour genes, cytokine genes and/or toxin genes.

6. The retroviral vector according to claim 1, wherein said promoter is a strong, constitutive promoter.
7. The retroviral vector according to claim 1, wherein said retroviral vector is replication-defective.
- 5 8. The retroviral vector according to claim 7, wherein said retroviral vector is based on a vector of the pLXSN family.
9. The retroviral vector according to claim 1, wherein said retroviral vector is based on a promoter conversion vector.
- 10 10. A recombinant retroviral vector system comprising a retroviral vector according to claim 1 as a first component, and a packaging cell line harbouring at least one retroviral and/or recombinant retroviral construct coding for proteins required for said retroviral vector to be packaged.
11. A retroviral particle produced by transfecting a packaging cell line of a retroviral vector system according to claim 10 with the retroviral vector according to claim 10.
- 15 12. A retroviral provirus produced by infection of target cells with a recombinant retroviral particle according to claim 11.
13. mRNA of a retroviral provirus according to claim 12.
14. RNA of a retroviral vector according to claim 1.
- 20 15. A host cell infected with a retroviral particle according to claim 11.

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16. A pharmaceutical composition containing a therapeutically effective amount of a recombinant retroviral particle according to claim 11.
17. A pharmaceutical composition containing a therapeutically effective amount of a recombinant retroviral vector system according to claim 10.
- 5 18. A method for introducing homologous and/or heterologous nucleotide sequences into target cells comprising infecting the target cells with recombinant retroviral particles according to claim 11.
19. Use of a recombinant retroviral vector according to claim 1 for producing a pharmaceutical composition for gene therapy.
- 10 20. Use of a recombinant retroviral vector system according to claim 10 for producing a pharmaceutical composition for gene therapy.
21. Use of a retroviral particle according to claim 11 for producing a pharmaceutical composition for gene therapy.

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